Urara MIZUSHIMA*: *Entodon luridus* versus *E. Okamurae***

水島うらら*: フトサナダゴケについて**

Entodon Okamurae Broth. grows on stream side or on wet ground in forests in Japan. In the subgenus *Erythropus* of the genus *Entodon*, it is a well marked species by its boat-shaped concave leaves spirally arranged (not pseudo-distichously) on the branches and stems, and the setae 1.5–2.0 cm long and the rather large capsules tinged dark chesnut-brown when matured. The columella is persistent. Microscopically it is characterized by the peristome structure; the exostome teeth linear-lanceolate, chesnut-brown below, yellowish brown upwards, the dorsal surface with median line and articulations, horizontally striolate below the middle, suddenly changing to vertical striolae, the vertical striolae gradually decreased and papillose upwards, 1 or 2 apical sections sometimes smooth, the ventral surface with low lamellae; endostome segments with low basal membrane, yellow, smooth, keeled and sometimes perforate. These characteristics have a striking similarity with Dixon's note(1) on *E. luridus*, and it runs as follows: "...a rather slender plant with pinnate stems, rather slender branches, non-complanate leaves, a rather long seta, circa 1.5 cm, a fairly large, dark brown, cylindrical capsule, with the peristome teeth striolate, transversely below, obliquely and vertically above, with the processes smooth." It is a mere citation of Brotherus' key(2) as Dixon himself says, but a question arose as for the identity of *E. Okamurae* and *E. luridus*. The latter was first described under *Neckera* in 1843 by W. Griffith based on his own collection from Surureem, 5,600 ft., Kahsia Hills in Assam. The appearance of the whol plant, the foliation, the shape of the stem and branch leaves, also perichaetial leaves, the color of the seta and capsule, the character of the columella and the general appearance of the peristome are very similar to those of *E. Okamurae*. But the description on the capsule is different from that of other species of the genus *Entodon*.

---

* Makino Herbarium, Tokyo Metropolitan University, Fukazawa-2, Setagaya, Tokyo. 東京都立大学理学部，牧野標本館.

** Contribution no. 20 from the Makino Herbarium of Tokyo Metropolitan University.

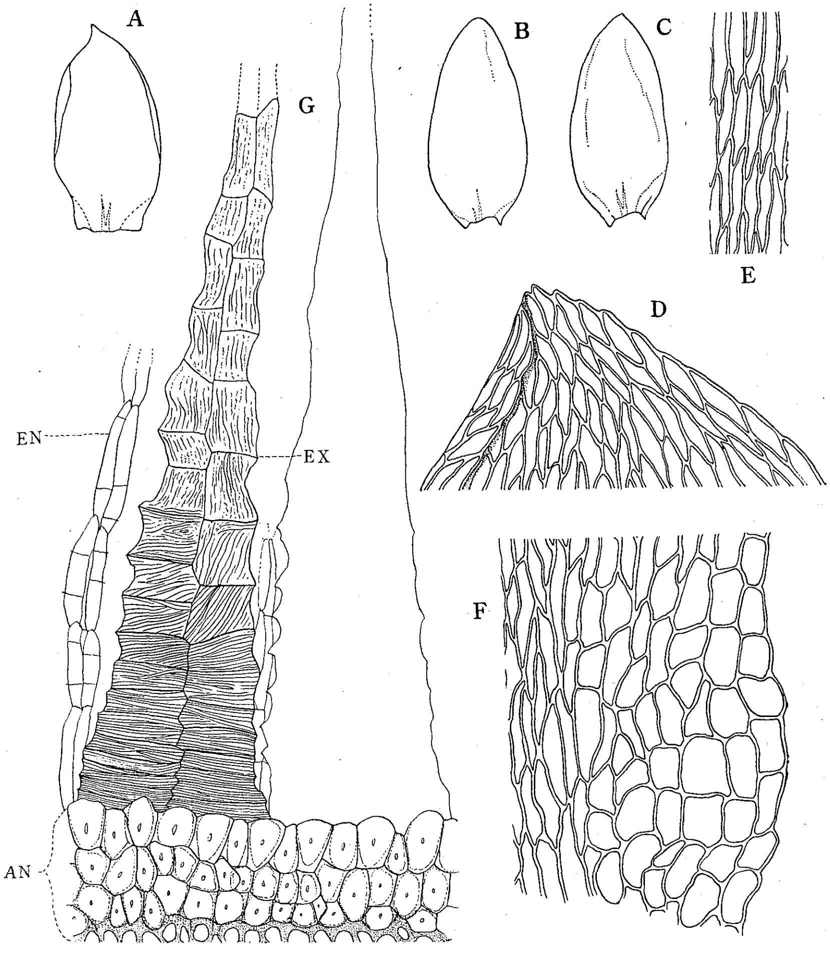

Fig. 1. *Entodon luridus* (Griff.) Jaeg. (from holotype).

A. Stem leaf, ×23; B-C. Branch leaves, ×23; D. Apical part of stem leaf, ×270; E. Median leaf cells, ×270; F. Alar part of stem leaf, ×270; G. Peristome, ×367. (AN: annular cells, EN: endostome segment, EX: exostome tooth).

The character of the annulus does not coincide with that in the species of the subgenus *Erythropus* in which *E. Okamurae* is included. That is; "Capsule *inclinata, leviter arcuata, obliquiscula, rubra incomplate annulata.*" In the genus *Entodon* the capsule is almost always erect and not arcuate, and the annulus is distinctly exist in most species of sect. *Erythropus*. I wonder why Jaeger transferred *Neckera lurida* Griff. to *Entodon* with no explanation on such an exceptional character of the capsule, and do also why Brotherus placed it in his sect. *Erythropus*. About the structure of the exostome teeth, Griffith made so brief description that one cannot deduce a precise judgement.

To make these obscurity clear, the author examined the holotype specimen of *E. luridus* loaned from the Kew Herbarium* and other specimens identified as *E. luridus* from the Herbarium of the New York Botanical Garden, British Museum and others. Among few capsules found in the holotype specimen, only one is clearly inclined in a sharp angle from about 1 mm below the capsule base, but the others are nearly erect. The erect capsules are all deoperculated, but the inclined one is operculated and appears to be somewhat younger than the others. Moreover all the capsule are not arcuated against Griffith's description. So the inclined capsule of *E. luridus* does not seem to be natural but an artifact. The annulus consists of three rows of somewhat larger cells than those of the capsule wall (fig. 1, G), and never incomplete. Thus the diagnostic characters shown in the original description of *E. luridus* are ceased to exist. The details of the peristome structure in the holotype specimen well agree with those of *E. Okamurae* (fig. 1, G). Thus *E. Okamurae* Broth. (1911) must be reduced to the synonym of *E. luridus* (Griff.) Jaeg. (1879).

The reports on the locality after Griffith are scanty. Mitten(4), Jaeger(5), Paris(6), Brotherus(2) and Brühl(7) cited only the type locality. Dixon reported *E. luridus* from Pankim La on Abor Hills in Assam in 1937(3) and from an uncertain locality in India in 1938(1). Examing the specimens identified by Dixon as *E. luridus*, I found four species *E. prorepens, E. myurus, E. laetus* and a species closely resembled *E. luridus*. The last species was collected from the western part of sub-Himalayan tracts. Its surface view of the exostome teeth closely resembles that of *E. luridus*. The teeth are shorter, more blunt at the tip, and lighter in color, and their base arise from the shallow place of the capsule mouth. Its leaf is more gradually tapered toward the tip. This holds an intricated problem to which I shall try to settle later. Apart from this question, as far as I am aware, *E. luridus* is endemic to Assam.

---

* I wonder why Dixon denied the existence of the type specimen of *E. luridus* in his papers of 1937(3) and 1938(1).

In addition, the description of *Glossadelphus pernitens* made by Sakurai⁸⁾ on the sterile material from Mt. Takakuma in southern Kyushu in Japan shows some similarities with that of *E. luridus*, especially in the form of the leaves. The genus *Glossadelphus* can be distinguished from *Entodon* by its yellowish color of plant, rather asymmetric leaves and the existence of papillose cells in the blade. About these points Sakurai described as (a) "caespitibus... atroviridibus pernitentibus, (b) folia... e basi haud decurrentia, plus minus angustata ovato-lanceolata, breviter acuminata vel obtusiuscula, valde cymbiforme concava, symmetrica, and (c) cellulis in medio folii anguste linearibus... apice papilloso exstantibus." Among these (a) and (b) are the characters of the genus *Entodon*, while (c) is of *Glossadelphus*. Examining the holotype specimen kept in the Makino Herbarium of Tokyo Metropolitan University, the leaf-cells are smooth throughout contrary to Sakurai's description. *G. pernitens* is also reduced to the synonym of *E. luridus*. Thus the nomenclature is as follows:

Entodon luridus (Griff.) Jaeg. in Ber. S. Gall. Naturw. Ges. **1876–77**: 294 (1978)

Neckera lurida Griff. in Calcutta Journ. Nat. Hist. **3**: 66 (1843); Notulae Pl. Asiat. H. Crypt. Pl. 452 (1849)

Stereodon luridus Mitt. in Journ. Proc. Linn. Soc. Suppl. Bot. **1**: 109 (1859).

Entodon Okamurae Broth. ex Card. in Bull. Soc. Bot. Gén sér. 2, **3**: 285 (1911); U. Mizushima in Journn. Hattori Bot. Lab. **22**: 130, fig. 10, A–N, Map. 3, pp. (1960) syn. nov.

Glossadelphus pernitens Sakurai in Bot. Mag. Tokyo, **48**: 398 (1934).

Type: W. Griffith, no. 204 Surureem, on rock, 5,600 ft. Kahsi Hills in Assam (no. H 2847/66–4 of K).

Distr.: Assam, China (Kweichow & acc. P. S. Chen⁹⁾ in n. China), Korea, Vladivostok, Japan.

Acknowledgements I should like to express my sincere thanks to the Directors of the Royal Botanic Gardens, Kew, British Museum (Nat. Hist.) the New York Botanical Garden, Dr. A. Noguchi of Kumamoto University, Dr. H. Ando of Hiroshima University, Dr. N. Takaki of Nagoya University and many others for the loan of specimens including holotypes. Special thanks are due to Dr. W. C. Steere of the New York Botanical Garden for

his kind help in literature.

References

1) Dixon, H. N., 1938. Notes on the moss collections of the Royal Botanic Garden, Edinburgh. Notes from Roy. Bot. Gard. Edinburgh 19 no. 95: 19. 2) Brotherus, V. F. 1925. Musci in Engler and Prantl's Pflanzen-familien Band 11: 391. 3) Dixon, H. N., 1937. Mosses collected in Assam. Journ. Bombay Nat. Hist. Soc. **29**(4): 789. 4) Mitten, W., 1859. Musci Indiae Orientalis. Journ. Proc. Linn. Soc. Suppl. Bot. **1**: 109. 5) Jaeger, A., 1878. Genera et species muscorum systematice disposita seu Adumbratio florae muscorum totius orbis terrarum. Ber. Thät. st. Gal. Naturw. Ges. **1876–77**: 294. 6) Paris, G., 1904. Index Bryologicus vol. 2: 133. 7) Brühl, P., 1931. A census of Indian mosses. Rec. Bot. Survey Ind. **13**(1): 99. 8) Sakurai, K., 1933. Beobachtungen über Japanische Moosflora VI. Bot. Mag. Tokyo **48**: 398. 9) Chen, Pan-Shieh *et al.* 1958. Preliminary report of the cenological and geographical study of Chinese mossflora. Act. Phytotax. Sinic. **7**(4): 271–293.

* * * *

フトサナダゴケはツヤゴケ属の中では流水の側に生える性質や葉形，胞子体の色や蘚歯の構造等から容易に識別出来る。筆者はその類縁について興味を持っていたが，今回 Griffith がアッサム産の標本に基いて記載した *Entodon luridus* を検討した結果，このものはフトサナダゴケと同一種であると考えるに至った。それ故，従来，呼び慣れていた *E. Okamurae* Broth. の学名は *E. luridus* (Griff.) Jaeg. の異名となる。さらに桜井久一博士が南九州，高隈山の標本に基いて書かれた *Glossadelphus pernitens* は基準標本に当ってみると，桜井博士が云われるような葉細胞のパピラは認められず，これも矢張りフトサナダゴケである。この種はこれで日本の他，アジア大陸でアッサム，西南支那（陳邦杰博士によれば华中区と呼ばれる支那大陸温帯の広汎な地域にも広く分布する由であるが，確かめる事が出来ない。）朝鮮，ウラジオストック等に分布する事が明らかとなった。